

It was equal in brightness to the portion of the Milky Way in *Cepheus* and *Cassiopeia*, then visible; and its presence made a striking contrast between the western sky and the dark blue of the eastern heavens. The light was watched till 8^h 30^m, when it was still visible, but much fainter, and not reaching beyond *Saturn*.

At the close of the Meeting the President stated that operations had commenced for determining the difference of longitude of Brussels and Greenwich by means of galvanic signals, with the view of thereby forming an electric communication between Greenwich and the principal Observatories of the Continent. Observations of signals and of transits had been already made for this purpose at Brussels by Mr. Dunkin of the Greenwich Observatory, and at Greenwich by M. Bouvy, one of the assistants of M. Quelet, the Director of the Royal Observatory of Brussels. The Observers were subsequently to exchange positions, by which means it was to be hoped that all personal equation, both for the transit observations and for the observation of the signals, would be completely eliminated. With respect to the velocity of the electric current, the President remarked that, in the present instance, there was reason for suspecting it to be affected by the subterranean and submarine passage of a portion of the wire. It appeared that the time occupied by the electric current in passing from Greenwich to Brussels amounted to $\frac{1}{10}$ th of a second, whereas the time occupied by the current in passing from Greenwich to Edinburgh, which was at almost double the distance, amounted only to $\frac{1}{17}$ th of a second. The velocity on the American telegraphs is still greater. The President referred to experiments instituted by Mr. Latimer Clark, which, in company with Dr. Faraday, he had had the pleasure to witness; which fully supported the idea that the galvanic induction of the surrounding matter, without impairing the insulation (which is sensibly perfect), materially retards the progress of the galvanic current.

The President acknowledged the obliging conduct of the authorities of the European and Submarine Telegraph Company, who had cordially co-operated in promoting the success of this important undertaking.

Note respecting Capt. Toynbee's Paper on the Rating of Chronometers by Lunars.

In reference to the communication of Captain Toynbee, respecting a method for determining the rates of chronometers by lunar observations made at sea, which have appeared in our *Notices*, we may observe (what many of our readers are doubtless aware of) that in the ordinary application of lunar distances taken with a sextant, the longitude corresponding to each set of distances is computed. When, however, chronometers on shipboard

are sufficiently trustworthy, the ship likewise changing her geographical position, in this case it is found to be more expedient simply to register the respective errors of the chronometers from Greenwich mean time, as computed from each set of distances, with the day and hour of observation. When a number of such results are obtained, sufficient to remove as far as possible the unavoidable errors of instruments, as well as personal peculiarities in observing, and these results being at the same time confined within reasonable limits as regards date of observation, then a mean of the errors is found corresponding to the mean date. Thus new errors and rates for the chronometers are determined, as pointed out by Captain Toynbee.

We must observe, however, that this valuable mode of consolidating, as it were, the results of lunar observations when made at sea, and the ship changing her position, and which method Captain Toynbee has so skilfully and successfully applied to practice, is not new. In the well-known Nautical Tables of Mendoza Rios, 2d edition, p. 45 of the explanation to the tables, he will find the method clearly explained, with an example of its application; and M. Rios observes, "The preceding rule and example have been communicated to me by my esteemed friend Captain Huddard, who has successfully made use of that method in his voyages." The same method was extensively applied in the polar expeditions of Capt. Sir E. W. Parry, during the periods of summer navigation; and the longitudes of various places thereby determined. In his second voyage in 1821, 2, 3, it was somewhat modified, by considering the weight of each day's observation to depend upon the number of observations, and also the interval between that day and the date from which the new errors were estimated.

We have now before us a considerable collection of observations, made for the express purpose of determining the lunar rates of chronometers in the South Pacific, and other parts of the world. Also, a printed form, in use at the Naval Schools of Greenwich Hospital, having the same object in view. Discussions of this nature are not, however, without value; if they elicit nothing that is new, yet they bring forward more prominently, and give strong testimony to that which is sound and valuable; and it is gratifying to find officers using the talents and energy with which they are gifted, and *discovering for themselves* the best modes of obtaining results upon which the safety of their ships so much depends.

The *Nautical Almanac* for 1857 has just appeared. This is the first volume of the Ephemeris which has been published since the appointment of the new Superintendent, J. R. Hind, Esq. Besides the usual quantity of matter it contains an extension of the list of Fixed Stars from 100 to 147, and a Supplement containing Ephemerides of all the newly-discovered planets for the year 1854.

Of the forty-seven stars now inserted for the first time, the mean

places of forty-three have been derived from the Greenwich Observations of 1850, as printed, and the observations of 1851 and 1852, as supplied in manuscript by the Astronomer Royal. The positions of γ Orionis, h^2 Sagittarii, ϵ Capricorni, and γ^1 Virginis, have been taken from the Greenwich Twelve-year Catalogue, the place for 1840 alone having been adopted for the latter star. The proper motions, as determined by the Rev. R. Main, in his paper on the subject (*Mem. Ast. Soc.* vol. xix.), or computed by similar formulæ, have been included in the reductions of the mean places of the forty-seven additional stars to the year 1857.

Among minor improvements visible in this volume may be mentioned an economising of space, which has been judiciously employed in promoting the usefulness of the Ephemeris.

Determination of the Longitude of Papeété, from Observations of a partial Eclipse of the Sun.

(Communicated by Rear-Admiral Sir Francis Beaufort.)

The geographical position of Tahiti was originally determined by Captain Cook on the occasion of the expedition which was despatched under his command by the British Government to observe the transit of *Venus* at that island in the year 1769. The observations of the transit, which occurred on the 4th of June, 1769, were made at a place in the northern extremity of the island, since called Point Venus. The calculations indicated the longitude to be $151^{\circ} 52' 54''$ relatively to the meridian of Paris.

The observations contained in the present communication were made at the Government House of Papeété (the capital of Tahiti), on the occasion of an eclipse of the sun, which occurred on the 6th of June, 1853. It was intended that observations should also be made at Afaite, one of the neighbouring islands, where the eclipse was to be annular; but the expedition despatched by the Governor for this purpose failed to arrive before the occurrence of the phenomenon.

The eclipse was observed at Papeété by three individuals, viz. by the Governor, by Lieut. Desaux of the French Navy, chief officer of his staff, and by M. Briot, his ordnance officer. Lieut. Boulangé counted the seconds for the three observers upon a marine time-keeper, regulated from observations made by him on the preceding days and two hours before the occurrence of the phenomenon. The sky was very clear.

The precise instant of the separation of the two discs was announced by the three observers as follows:—

	h	m	s
M. Briot	12	51	41.0
M. Desaux	12	51	43.5
The Governor	12	51	44.0

Of the three observations, the two last are entitled to the